GARDEN AND FOREST.

PUBLISHED WEEKLY BY

THE GARDEN AND FOREST PUBLISHING CO.

Office: Tribune Building, New York.

Conducted by . . . . . Professor C. S. Sargent.

ENTERED AS SECOND-CLASS MATTER AT THE POST-OFFICE AT NEW YORK, N. Y.

NEW YORK, WEDNESDAY, OCTOBER 23, 1895.

TABLE OF CONTENTS.

PAGE.

Editorial Article:—The Year-book of the Department of Agriculture 421
A Season with the Native Orchids.—II. . . . . *Rev. E. J. Hill.* 422
Notes on some Arborescent Willows of North America.—III. (With figures.) . . . . . *M. S. Bebb.* 423
Plant Notes 423
Cultural Department:—Lilies . . . . . *E. O. Orpet.* 426
Carnations and Chrysanthemums . . . . . *T. D. Hatfield.* 427
Notes on Apples . . . . . *Professor S. A. Beach.* 428
California Irises . . . . . *J. N. G.* 428
Aglaonema commutatum . . . . . *N. J. R.* 428
Correspondence:—Garden Notes from Southern California . . . . . *C. R. Orcutt.* 428
Bulletins and the Experiment Stations . . . . . *S. R.* 429
How to Exterminate Cat-tails . . . . . *T.* 429
Railway-station Gardens . . . . . *E. H. B.* 429
Recent Publications 429
Notes 429
Illustrations:—Salix alba × lucida, Fig. 57 424
Salix nigra × alba, Fig. 58 425

The Year-book of the Department of Agriculture.

THIS is the first of a new series of agricultural publications to be issued under the act of January 12th, 1895. What was formerly called the annual agricultural report, and distributed by Congressmen, consisted of the administrative report of the Secretary of Agriculture, together with those of the chiefs of the bureaus and divisions in his department, and to these were added some detailed accounts of the investigations conducted by members of the scientific staff. Since the details of the executive business at Washington have little permanent value, the new act directed that the scientific monographs designed for the instruction of the people should be separated from the business matter and published in this Year-book for the improvement and education of farmers and other readers. Assistant Secretary Dabney, who has compiled this volume, says in its preface that it represents only imperfectly the ideal of what such a book should be. The law under which it has been prepared was not enacted until after the usual time for filing the report under the old rule, and many of the papers had been prepared and submitted in the usual form. Under the circumstances the only thing to be done was to select from the matter in hand the most deserving papers which represent a variety of work in different lines carried on by the various divisions of the department, and to adapt them to the purposes of the new publication. It would, therefore, be unfair to criticise the book for any shortcomings, and, indeed, it may be said that, considering the limited opportunities for making such a compilation, it is a most creditable performance. The book contains the report of the Secretary of Agriculture for 1894, which would have been better if Mr. Morton had been able to restrain himself from making political speeches whenever he has an opportunity. The second part, or the great bulk of the book, consists of a series of papers which have been prepared generally by chiefs of bureaus and their assistants, and these are discussions on a wide range of subjects related more or less closely to agricultural and horticultural practice. All of these have genuine value, and they represent the results of the latest research by men of recognized scientific standing. The book concludes with a brief series of useful reference tables on such subjects as the composition of foods for man and of feeding stuffs for animals, the fertilizing value of different foods and the methods for suppressing insects and fungus diseases and weeds.

The view we have always taken is that the legitimate way for the Government to aid agriculture is not by disseminating seeds or by actual help in stamping out plant diseases or suppressing insects or by helping to introduce new economic plants or improved fruits, but rather to increase the efficiency of the farmer by augmenting his knowledge. But the Government must at first acquire knowledge in order to disseminate it, and to this end expert talent of the first order is needed not only at the head of each division of the department, but of all the experiment stations, which are now vitally connected with the department. These are the men we must trust to make the experiments which farmers cannot make for themselves, since they have neither the time nor the training nor the means at command to carry them out successfully. Whatever these skilled workers may discover in science or practice that is new and useful should be furnished to the farmers in such a form that they can read, digest and apply it practically to the problems which they are called to face in their business. Of course, much of this interchange of thought is directly carried on between the stations and the farmers of the various states. There are also many publications, more or less elaborate monographs, issued from the various divisions of the Department of Agriculture, but this new book, as we understand from the preface, is meant to be a summary of the researches and discoveries of the year, so that the series will ultimately become a standard book of reference for American farmers.

It is still the habit of some newspapers to sneer at the scientific work done in the various divisions in the Department of Agriculture; but this is only the survival of a judgment formed at a period when the chief activity of the department was manifested in the distribution of seeds of common vegetables and ornamental plants, and pretty bad seed at that. But some of the research now made in the various divisions will take rank with the best scientific work in the laboratories of the world. Horticulturists are naturally more directly interested in the studies made by the divisions of vegetable pathology and of entomology, because in recent years science has rendered such material aid in the incessant war which has to be waged against insects and fungi. But it should be remembered that there are other fields where systematized investigation can be quite as helpful. The forage interests of the country, for example, are of enormous value. The hay crop alone is worth $600,000,000, and this, of course, does not take into account the cash value of the pasture on grazing-lands. More than fourteen million animals are now feeding on native grasses in our vast western ranges, and we can, therefore, realize the vital necessity of securing, if possible, new and better forage plants. The study of grasses attempts to familiarize the people of the country through bulletins and leaflets with the best means of preserving our most nutritious native grasses, and the most promising projects for introducing improved and useful forage plants from foreign countries is a work which must prove of inestimable value, and this is now carried on by Professor Lamson-Scribner, chief of the Division of Agrostology. What is accomplished for agriculture in the Weather Bureau, in the Bureau of Animal Industry, in the divisions of Chemistry, of Pomology, of Botany and of Forestry can easily be understood. Besides all this, the office of Experiment Stations, where the bulletins and reports not only from our own stations, but from institutions for agricultural inquiry in foreign countries, are sifted and compiled and published in convenient form, is constantly furnishing material, so that there will be no lack of matter to fill a book every year which will be indispensable to practical farmers and gardeners.

This first volume may lack the balance and completeness which can be reasonably hoped for in its successors,

but such subjects as the relation of soil to various kinds of crops, the use of mineral phosphates, the relation of water to the growth of plants, the construction of good roads, the food habits of certain birds, the advantages of testing seeds for purity, and many more are treated in such a way that every farmer who reads them will feel himself better-equipped for his daily duties. Altogether, this new departure in the publications of the department takes a most hopeful direction and ought to make it stronger and more efficient.

A Season with the Native Orchids.—II.

ARETHUSA BULBOSA is another beautiful Orchid sometimes found in the shaded bogs of the Pine-barrens, where its flowering season begins in early June. It grows on mossy or Fern-clad hummocks overshadowed by the Nemopanthes and the Black and the Speckled Alders, where it is not easy to find. It is of low stature, being five or six inches high, and bears a single, or, occasionally, two, large purple flowers on a scape. The parts of the ringent perianth are more nearly alike than those of most Orchids, the lip being a little dilated and recurved toward the tip. At the time of flowering, its solitary leaf is concealed in the sheath of the scape, but it appears after the plant has flowered.

The flowers of Calopogon pulchellus are seen some years by the 10th of June, and they may still be found in early August. They are a deep or almost purple pink, three or four often expanding on the stem at once, overtopped by the large inflated buds of later flowers. One of their pretty features is the dilated lip, copiously bearded with pink or purplish hairs, which are enlarged at the tip and stained with yellow. The lip has a kind of hinge near its base, by means of which it easily moves up and down, or falls forward on the column when agitated by the wind or otherwise disturbed. The flowers are bright and showy objects in the damp meadows, lifted amid the grass on slender stems a foot or two high, which rise from a long, linear leaf. It is one of the few Orchids that find their way into the prairies, where it is associated with Lythrum alatum, Œnothera fruticosa and Phlox glaberrima. Sometimes the flowers are a very pale pink, or almost white. Pogonia ophioglossoides, a plant of similar habits, but less common, flowers about the same time in June. The two are often associated, the Pogonia sometimes forming large beds, and the pale pink or rose-colored flowers so numerous as to impart a rosy tinge to the grassy spots in which they grow. It is a smaller plant than the Calopogon and has a smaller single flower, though occasionally there are one or two more on the one-leaved stem. It is fragrant, and has a bearded or crested lip. Pogonia pendula, quite like it in habit, but very rare, is a smaller plant, being four to eight inches high. The stem bears several leaves, and usually has three or four flowers in the axils of the upper ones. Those I have found here have the flowers white, or faintly tinged with pink. It is later than the common Pogonia and appears in August.

The Twayblade (Liparis) is represented by both species of the region covered by Gray's *Manual*. They flower in late June. L. liliifolia is the more slender and prettier of the two, with more numerous flowers, ten to twenty in a showy raceme. They have a rather large brown-purple lip, but the remaining parts of the greenish or yellowish-white perianth are so narrow as to be almost capillary. The pedicel is long, and the narrow, reflexed parts of the flower resemble the sprawling legs of an insect. It grows in ravines, in moist clay woods, and in the damp sands, usually in the shade, and is quite rare. L. Loeselii is more abundant, being found throughout the sand region in moist soil in grassy open places. It is a stout little plant, from four to twelve inches high, with rather small, yellowish-green flowers, the parts of which are also narrow. The flower-bearing bulb almost always has that of the preceding year attached to it, surmounted by the withered scape or a remnant of it.

The Coral-roots have purplish or yellowish stems and flowers and a queer mass of hard, fleshy roots resembling some kinds of coral. They readily break in pieces when removed from the ground. The lack of green in the stem and rudimentary scale-like leaves suggests parasitism, but I have never been able to trace any connection between their roots and those of other plants. Fibrous roots from other sources run in among their roots, but are loose and seem unattached, and no haustoria have been detected. Their roots are commonly well down in the soil, but not so far as to be below the leaf-mold, which abundantly covers the ground where they grow, so that they may be saprophytic if unable to elaborate inorganic food by themselves. Corallorhiza innata is the earlier and more slender of the two, flowering in May and June. It is only occasionally met with on the moist sand ridges among the Pines. C. multiflora is a stout plant, with a purplish, many-flowered stem, and is more often seen in the dry upland woods and wooded ravines. Its large, oblong pods depending from the stem soon become the most prominent features of the plant. It is in bloom from midsummer till September.

The genus Habenaria, or Rein-Orchis, is represented here by ten species, all but one or two being common. Those with green or greenish flowers are the earliest, H. bracteata leading the way by the middle of May. H. Hookeri is almost as early. It is found in the damp Pine woods, and has two large orbicular or oval thick and glossy leaves, which lie close to the ground. It reaches a foot in height, and though the flowers are larger than most of those of the green-flowered kinds, they are dull and unattractive. It is a lonely plant, springing up from its bed of Pine leaves, on which its own two shining leaves rest. H. tridentata is a plant of the wet woods, with a low stem carrying a single full-grown leaf and very small flowers. H. virescens and H. hyperborea are taller plants, with stout, leafy stems, and occur in peat-bogs as well as in wet meadows and woods.

The most beautiful of the Habenarias belong to the group of Fringed Orchids, which have the lip, and often some other parts of the flower, variously fringed and dissected. They occur most abundantly in July, but some are found the last of June and in the early part of August, and all are denizens of wet ground. H. ciliaris, the yellow Fringed Orchis, easily takes the lead as the finest of the group, and is one of the most beautiful of all our native Orchids. The lip of the showy orange-yellow flowers is furnished with a long hair-like fringe, and the petals are also cut into a similar but shorter fringe. It delights in the wet sands, and multiplies quite freely by tuberous roots, some of which attain the length of three or four inches. The connection with the parent plant finally withers away and dies, but the plant being a perennial, little groups or colonies result, with the connection with the parent plant more or less traceable, or sometimes quite fresh. H. psychodes, the Purple-fringed Orchis, multiplies in a similar way. It is also very handsome, having a long dense spike of numerous smallish pink-purple flowers, which are pleasantly fragrant. The broad wedge-shaped lip is cleft into many short divisions. The plant is sometimes found in the deep shade of swamps, in the midst of Mosses and Ferns, but it is oftener seen in the bogs and wet meadows bordering the swamps, or growing amid the grass in the more open thickets. H. lacera, the Ragged-fringed Orchis, is much less common, and occurs in moist thickets. The greenish flowers, with their narrow lip deeply parted into a long capillary fringe, are always objects of interest if not as attractive as those of their more brightly colored congeners. H. leucophœa is another of the greenish-tinged species, but is frequently found with flowers varying toward white. The fan-shaped lip is copiously divided, and the flowers are rather large and very fragrant. It bears a long loose spike and forms a pretty object in the wet meadows. It can be grouped with the prairie Orchids, and is one of our most common species. It was formerly abundant in the wet prairies, where

cultivation has now largely destroyed it. It is the largest of the Habenarias, being sometimes four feet high, and blooms from the last of June till August. H. blephariglottis, the White-fringed Orchis, is a plant of the peat-swamps or open borders of wet woods, and is our rarest species. The white flowers are very beautiful, being similar to those of H. ciliaris, but with a lip less abundantly and more irregularly fringed. It is a lower plant than most of the other fringed Orchids, rarely more than a foot high.

Goodyera pubescens, one of the Rattlesnake Plantains, is sparingly found in the Pine district. The dense spike of greenish white, glandular pubescent flowers appears in July and August. Its chief attraction is the tuft of thick and spotted or white reticulated leaves at the base of the flower-stalk. Their texture is rich, and their variegation makes it one of our most beautiful-leaved plants. Closely allied to this in floral structure are two species of Spiranthes, or Ladies' Tresses. S. gracilis comes into bloom about the first of July, and lasts well along into September. Its floral season is, therefore, longer than that of any of our Orchids. It is a pretty little plant with its spike of small white flowers winding spirally around the slender stem. It is a frequent plant of the Pine woods as well as of ravines and wooded slopes. S. cernua is a stouter and much more abundant plant of wet grassy lands both of the Pine-barrens and the prairies, blooming in September and October. The white waxy flowers are very sweet-scented. It has a tendency to persist in the meadows after they have been subjected to cultivation.

This plant closes with the frosts of autumn the Orchid season, which began with Orchis spectabilis in late April. At no time after the appearance of the Showy Orchis will the woods and fields be without flowers of some of these charming plants, most of which are handsome and all of them curiously constructed. Their contrivances for cross-fertilization and their insect visitors are not the least of their entertaining features, and provide a constant source of enjoyment and instruction for those interested in this phase of plant and insect life.

Chicago, Ill. *E. J. Hill.*

Notes on some Arborescent Willows of North America.—III.

Salix alba × lucida (see fig. 57, page 424).—Leaves lanceolate, narrowed at base, tapering to a cuspidate-acuminate point, closely and sharply glandular serrate, firm in texture, dark green, but not glossy above, glaucous beneath, clothed at first with silky, ferruginous hairs, which are more or less persistent beneath; petioles glandular; stipules (present only on vigorous sterile shoots) lanceolate, half the length of the petiole; aments leafy, peduncled, gracefully cylindrical, usually flexuose; scales villous at base, naked above, erose dentate; stamens three to five; capsule taper-pointed from an ovate base; pedicel two to three times the length of the gland; style short, but distinct; stigmas bifid.—Exsicc., Bebb, *Herb. Salicum*, No. 41.

Salix alba (subspec.) Pameachiana, Andersson, *Sal. Monog.*, 48 (1864); De Candolle, *Prod.*, xvi., part ii., 242 (non S. Pameachiana, Barratt!)

Habit of growth vacillating between that of the two parents; sometimes a large, branching shrub, as in Salix lucida, at others a small tree twenty-five to thirty feet in height, with a distinct trunk, as in S. alba; year-old twigs yellow or bronzed, stained with crimson in the sun, sometimes brownish. Near Amherst, Massachusetts, where, during the summers of 1872–73–74, Professor H. G. Jesup collected numerous forms of this hybrid; Westville, Connecticut, Mr. J. A. Allen, a form with staminate aments more like S. lucida, but stamens only two to three; Providence, Rhode Island, Mr. S. T. Olney. The same tree from which specimens were taken for Mr. Carey, which served as the type of Andersson's S. alba Pameachiana. Ithaca, New York, Professor W. R. Dudley; Newark, Wayne County, New York, Mr. E. L. Hankenson.*

Distinguished from Salix lucida by the narrower leaves; narrower and pointed stipules, more slender aments and fewer stamens; from S. alba by the leaves darker green above, often rusty pubescent beneath, and more sharply serrate; more tapering capsules, longer pedicel and style, and especially by the dentate scale, which is a distinctive derivation from S. lucida.

Salix nigra × alba (see fig. 58, page 425).—Briefly described, this has the foliage of nigra and the aments of alba. The leaves, however, bear a still closer resemblance to some forms of S. nigra × amygdaloides, being pale or glaucous beneath, with a long, tapering, cuspidate point. The petioles are shorter, more glandular and downy. The conspicuous and persistent stipules are acute or acuminate, with a mucronate point. Fertile aments scarcely distinguishable from S. alba, the capsules greenish and sessile. Staminate aments cylindrical, erect, densely flowered, wanting altogether the loose arrangement of the flowers on the rachis common to both parents; stamens usually three, less frequently four or five.

Found near Newark, Wayne County, New York, by Mr. E. L. Hankenson, who has, for many years, assiduously studied the Willows of his locality. Mr. Hankenson writes of this hybrid as follows: "The two large trees which first attracted my attention were forty feet or more in height, with trunks one to two feet in diameter. These were cut down in 1882. The trees now standing, four in number, grow on the bank of a brook in the same immedate locality, only a few rods apart, and are about thirty feet high. Salix nigra grows with them, and only a few rods above, where the road crosses the brook, are several old trees of S. alba vitellina. In general appearance this hybrid resembles S. amygdaloides; the leaves are much the same, but firmer in texture, darker and more glossy above and more distinctly and uniformly glaucous beneath. The large branches, too, have the same smoothness and greenish hue."

The possibility of this cross being demonstrated, it seems remarkable that it has not been more frequently repeated, for in the older settled portions of the country it is very common to find the two parent species growing together on the banks of streams. It would seem, however, that the fertilization of Salix alba by S. nigra is not favored by nature, and this view may find some correlative support in the fact that in Europe, where S. triandra is the geographical equivalent of S. nigra, and a species which has entered into some of the most remarkable crosses on record, no hybrid between S. triandra and S. alba is mentioned by Andersson.

Rockford, Ill. *M. S. Bebb.*

Plant Notes.

Sassafras sassafras.—Few of the forest-trees of eastern North America are more beautiful at this season than this member of the Laurel family when its large variously formed leaves have turned to delicate shades of yellow and orange, sometimes tinged with red. The fruit, which, as a rule, is sparingly produced, is abundant in some years, and as it ripens in September and October it adds much to the beauty of the tree at this season, being dark blue and surrounded at the base with a bright scarlet calyx-tube and raised on a thick scarlet stalk. The birds relish its aromatic flavor, however, and they usually eat it as soon as it begins to color. The beauty of the Sassafras is not confined to autumn. Its shining green branches in the winter, its drooping clusters of pale yellow flowers in early spring,

* Professor Porter finds near Easton, Pennsylvania, a singular form so different from all that have entered into the above description that I have hesitated to include it among the rest, and yet it can scarcely be other than a hybrid Salix alba × lucida. The young leaves accompanying the full-grown, but not overripe, capsules are fully one inch broad even when not more than three inches long, covered with silky white hairs when just expanding, soon smooth. The fertile aments are not distinguishable from S. alba. The staminate are rather thinly flowered, but the individual flowers are so conspicuous as to give the ament an appearance unlike either that of S. alba or S. lucida. The scales are pale, 1½mm. wide by 3mm. long, and even more distinctly dentate than in genuine lucida; stamens mostly four.

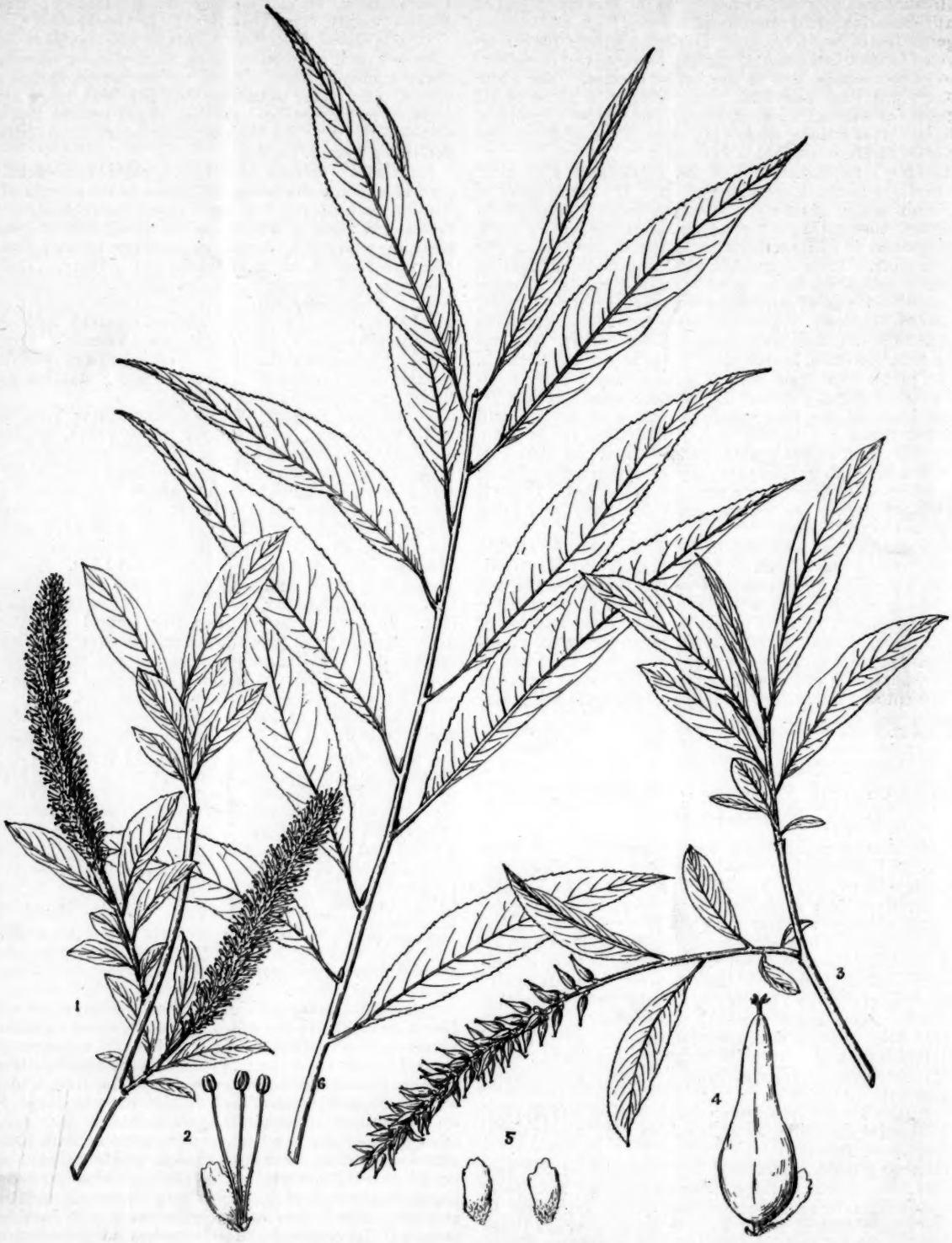

Fig. 57.—Salix alba × lucida.—See page 423.

1. A flowering branch of the staminate tree, natural size. 2. A staminate flower, enlarged. 3. A fruiting branch, natural size. 4. A fruit, enlarged. 5. Scales of the staminate and pistillate flowers, enlarged. 6. A sterile branch, natural size.

its healthy and fragrant leaves in summer, make it most attractive at every season. It is a tree of neat and individual habit, with an average height in this latitude of about forty feet, with stout, and often twisted, branches placed nearly at right angles with the stem, so that the foliage lies in strata and forms a rather flat head. In a full-grown tree the red-brown and deeply furrowed bark gives the trunk a most picturesque appearance. The Sassafras ranges from the shores of Massachusetts Bay to Florida and west beyond the Mississippi, and reaches its maximum size in southern Arkansas and the Indian Territory, where trees are not uncommon with trunks six or seven feet through

Fig. 58.—Salix nigra × alba.—See page 423.

1. A flowering branch of the staminate tree. 2. A staminate flower, enlarged. 3. Scale of a staminate flower, enlarged. 4. A flowering branch of the pistillate tree, natural size. 5. A fruit, enlarged. 6. Scale of a pistillate flower, enlarged. 7. A summer branchlet, natural size.

and eighty feet high. Large individual trees are often seen much farther north, and on page 215 of vol. vii. we gave the portrait of a tree on Long Island which has a diameter of forty-three inches at two feet from the ground. Although it is so common, like many other native trees, it is much neglected by planters, notwithstanding its usefulness. It is easily raised, too, for if the seeds are planted as soon as they are ripe they will germinate next spring, and the suckers, which are often produced in great abundance, can be easily transplanted. To many persons the Sassafras is interesting from its relationship to such trees as the Bay, the Cinnamon and the Camphor, and perhaps its aromatic flavor

helped to give it the reputation for sovereign curative properties which made it so eagerly sought for by Europeans for two centuries. Thoreau, who found poetry about him everywhere, wrote in his journal, "When I break a green twig of Sassafras as I go through the woods in February I am startled to find it as fragrant as it is in summer. It is an importation of all the spices of an oriental summer into our New England woods, and very foreign to the snow and the brown Oak leaves."

Evonymus alatus.—There are about forty species of Evonymus scattered throughout the northern hemisphere, the greater number of them coming from the tropical regions of China and Japan. Many of them are valued in gardens for their handsome foliage and brilliant fruits. Our native Wahoo, or Burning Bush, E. atropurpureus, is an inhabitant of many old American gardens, but it is not so bright in fruit as some garden forms of the well-known Spindle-tree, E. Europæus, which has been cultivated for centuries. E. Japonicus is one of the most ornamental of evergreen shrubs, and the variety known as E. radicans, with climbing stems and persistent small leaves, is an admirable substitute for Ivy where plants of the latter will not succeed. The Japanese E. alatus, however, is much superior in its autumnal foliage to either the American or European plants, although its fruit is less brilliant. This plant is abundant in the central mountains of Japan and in the northern part of that country. It is perfectly hardy in New England, and makes a handsome compact shrub. Its claim to distinction, however, is the remarkable colors of its foliage in autumn, which in individual specimens is a clear rose-pink quite unlike that of any other woody plant.

Cosmos sulphureus.—Among a number of seeds from New Zealand, disseminated by a well-known Swiss plantsman in 1894, were supposed to be those of this annual. They were again offered this season by a prominent English seedsman and, perhaps, others. This proves to be a case of mistaken identity, the seeds being those of a Bur Marigold, Bidens ferulæfolia, a plant allied to the Cosmos, and also from Mexico originally, but very distinct from Cosmos sulphureus. Bidens ferulæfolia is an annual with numerous slender stems, narrow leaves and golden-yellow flowers with narrow oval florets. It reproduces itself readily from self-sown seeds, and forms spreading masses a foot or one and a half feet high. It is rather pretty, but would not be generally appreciated in gardens. Cosmos sulphureus of Cavarilles, or C. Artemisiæfolia, is distinctly different and a rare plant in cultivation, though described many years since. It has not yet been offered by seedsmen, though it is likely to be on the market for next year. We have recently seen strong, well-grown plants four to five feet high, much branched, the leaves with wider pinnæ than the well-known C. bipinnatus. The flowers are similar in form to this species and are of about the same diameter—about three inches. The petals are slightly incurved, and they vary in color from sulphur to deep orange-yellow, and are of good substance. When it is added that the plants commence to flower in a young state in midsummer, or earlier, and continuously till fall, it will be seen that we have in this Cosmos a real addition to annuals of the first rank.

Helenium grandicephalum.—The flower-heads of this fine autumn-blooming plant are nearly two inches across, with a globular brownish disk, and wedge-shaped ray-florets of a rich yellow color suffused with red. The ovate-lanceolate leaves are three inches long and connate at the base. The plant branches freely and grows to a height of eighteen inches or two feet, according to circumstances. It is very floriferous and reminds one of some of the smaller single Gaillardias, both in color and habit. This is a promising new hardy perennial, possessing all the good qualities of the more robust Compositæ, without the weediness which detracts so much from the appearance of so many of them at this season. It can be propagated by seeds, and will, no doubt, become as popular as it is interesting and beautiful.

Pyrethrum uliginosum.—The great Ox-eye Daisy, which has become quite common in American gardens, as it deserves to be, is one of the few late-blooming Compositæ with white flowers, the majority of them being yellow or purple. It is a beautiful and floriferous species, producing numerous heads two inches or more across on slender leafy stems. The disk is comparatively small, pale yellow; the ray-florets long and narrow, pure white. The lanceolate, coarsely serrate leaves dull green above and grayish beneath. The habit is branching, and the plant is so well covered with foliage that it is useful, even when not in flower. It reaches a height of two or three feet and is completely covered with flowers as late as September. In order to develop the finest qualities of this plant it should be grown in a rich and moist ground, along the borders of lakes or streams, or in rich cultivated ground in smaller gardens. During dry spells abundant watering is necessary, as the lower leaves dry up quickly, and the flowers are of short duration unless grown under proper conditions.

Alocasia (Cyrtosperma) Johnstoni.—This is one of the boldest and most striking species of Alocasia, with leaf-stalks five or six feet tall. The blade is arrow-shaped, about two feet long, with the back lobes spreading and somewhat longer than the front lobe. The veins are bright rosy-red, very marked, and contrast beautifully with the olive-green, mottled surface of the leaf. On the lower side the ribs are very prominent, slightly spiny and mottled. The leaf-stalk is slender, tapering, almost erect, mottled with dark bands and somewhat spiny. This is a useful plant for large conservatories, and it is also available for house-culture, as it will thrive well in a shady position in a comparatively low temperature. It is one of the rarest plants of its class and is, perhaps, not to be found except in one or two places in this country. The soil should either be a rich vegetable loam or peat, in which it seems to grow equally well. When grown in a cool place, watering should be moderate; in a high temperature daily watering and spraying of the foliage becomes necessary.

Cultural Department.

Lilies.

THE past season has been more than usually favorable for Lilies in this part of the country. Copious showers at frequent intervals were the rule all the time they were growing, and the long, protracted dry period did not come until the bulbs were mature and beyond injury. For the best success Lilies must be planted in a cool moist soil that never becomes hot or dry, and preference should be given for a spot that is shaded by other growth, either that of deciduous shrubs or broad-leaved evergreens, in which positions most of the hardy kinds flourish for an indefinite period. It has been emphasized before in the columns of Garden and Forest that fall-planting is always best; there appears to be no exception to this rule, and the reason is plain. If a Lily-bulb be examined at any time soon after flowering it will be seen to have made a quantity of new roots from the base of the bulb, strong, vigorous feeders, that will continue to grow all winter in a favorable place, and when spring comes, and with it the flower-shoot, there is plenty of root-action to give it impetus until the thick matted whorls of roots are emitted from the lower part of the stem itself; these are made to give strength to the plant to produce flowers, and to build up the bulb again after it has made its supreme effort the alternating set of roots come again from the base. It has been part of my experience to unpack large quantities of Lilies just as they arrive from Japan, where the system of packing is a good one, each bulb being placed in a piece of wet clay, which is rolled round the bulb, then dried, and these are placed in the cases, and the intervening space filled up with dry clay soil. If all is perfectly dry, and kept so, root-action is entirely suspended; but if, as sometimes happens, moisture is admitted from some cause or other, the whole mass of soil will become matted with roots, and on their arrival here it is quite difficult to separate the bulbs. Japan Lilies arrive usually just a little too late for planting in the open ground in this section, and, perhaps, in most others, so that dealers keep them over and make them a part of their spring trade; but it would be preferable always

to get them as soon as they arrive, and pot them up, placing the pots in a frost-proof cellar until they start in spring, when they can be planted out when the ground is favorable.

Complaints have been frequent lately that Lilium auratum does poorly even the first season after importation; this seems to be due wholly to spring-planting, for if the shoots appear it is often only to dwindle away or become ill-formed, showing clearly that there is no adequate root-action to second the efforts of the bulbs. If these were obtained on their arrival in November and planted in good rich soil in six-inch pots, we should hear much less of poor results the first year. After this, L. auratum seldom makes a strong growth; at least, I have yet to see a planting that has stood the test of years. Some plants that have been reported as flourishing for a term of years have proved to be the broad-leaved form, L. auratum platyphyllum, that seems to have traces of L. speciosum in it, and has inherited the vigor of that species. This plant is also known as L. auratum macranthum from the size of its flowers, which are sometimes over twelve inches in width. There is also an unspotted variety of this called Virginale. It would be well if Japanese cultivators gradually grew this variety to the exclusion of the typical one, for with their system of culture it ought not to take long to get up a large stock. The cost of the variety is now two-thirds more than that of the typical bulb, but once set out there is no need to renew them, for the plants increase and grow better from year to year.

For the past ten weeks we have had a fine show of Lilium speciosum for decorative purposes, and the plants would have lasted two weeks longer but for the sharp frosts of the past week. All the forms of this Lily are well adapted for growing in pots, or if larger specimens are desired, wooden tubs or boxes may be made for them and painted green. Southern cypress is here no more expensive than good pine, and lasts very much longer, so that we are using it for all indoor work now. The Speciosum group is admirably adapted to this method of culture, and it affords alone such variety that it makes others undesirable at the same period. The kind we have always regarded as the best dark form is known in trade-lists as Melpomene. This is a native of Japan, and in no way connected with the kind raised by the late C. M. Hovey, of Boston, which was a hybrid between L. auratum and L. speciosum. It is possible that the same name has been applied to two kinds, the former not now being in cultivation. As we get it from Japan, this Lily is most vigorous, the flowers are of darkest crimson, heavily spotted, with pure white margin, the flower-stalks being red. There is another variety called Roseum that has green stems, with lighter-colored blooms, and is the next best-colored variety. The variety sent annually from Holland is quite inferior to those we get from Japan in these days, as the Dutch growers seem to keep on multiplying the kind first sent them, and the bulbs are never as large as those from Japan, nor is the growth as strong. Of white forms, the one sold sometimes as Album præcox, or Krætzeri, is the best of all, being pure white, with dark-brown anthers. Among them, however, at flowering-time we notice at times plants of the variety known as Album novum, with anthers of light golden-yellow color, which is a constant character. These four are the best of the varieties of L. speciosum, and there are about a dozen altogether offered in lists. Rich soil is essential for these Lilies when planted in pots or boxes, and it is well to add plenty of bone-meal to what would be regarded as a soil good for Roses. The effect of the bone is lasting, and when repotting directly after the flowers are over each year it is not desirable to disturb the mass of roots, but simply to shift them on into larger pots, so that the full benefit of the bone will be appropriated. Liquid stimulants are also given about flowering-time, for the old theory that manure in any form is injurious to Lilies has been exploded. They are, in fact, great feeders, and need an abundance of good stimulants to get them to their best year after year. In order to have them for a long period we store them all in the cellar after they have been potted, and they are brought out in batches as they start in spring, so that we get about six weeks' difference between the flowering-time of the first and last lots.

A good early Lily, and one that might be had at Easter-time in pots, is Lilium pomponium verum, the bright scarlet Turks'-cap fragrant Lily. The name verum is of catalogue origin, and is used to distinguish the red from the yellow form, L. Pyrenaicum, which is inferior as a garden plant and is of short duration in cultivation, while the scarlet form is in all respects a good Lily; it is the first to bloom outdoors in early summer, and will thrive in sandy soil. It resembles very much the Siberian L. tenuifolium, but the flowers are from ten to twelve on a stem. It is a native of the south of France, and usually comes with the L. candidum early in autumn. There is a difficulty in obtaining this Lily in quantity now from dealers here—at least, such has been our experience lately; but it should become better known than it is, as it is in every way a better garden plant than the L. tenuifolium, so much lauded of recent years.

South Lancaster, Mass. *E. O. Orpet.*

Carnations and Chrysanthemums.

THE past season has been very favorable in this section to Carnations planted out-of-doors. All the plants are now housed and look well. With one exception, growers have had little trouble with the dreaded rust. Some consider the immunity due to extra care in selecting cuttings and in keeping the stock healthy and growing until planted out in spring. Many growers are careless in this respect, and some disseminators have been guilty of sending out diseased stock. There is no doubt that cleanliness is a great preventive of disease and necessary to insure success. Mr. Tailby, of Wellesley, declares he has not a speck of rust on his place, and thinks this is due to dipping his cuttings in a dilution of the new fungicide, Lysol.

The variety Mrs. Fisher, which has until now been considered the best white, must give place to Alaska. This variety was raised by the late Mr. Chitty, of Paterson, New Jersey, who exhibited specimens in superb condition at the last Carnation meeting held in Boston during last spring. Its lasting qualities at this exhibition were remarkable. Mr. Nicholson, of Framingham, Massachusetts, a well-known expert, went to Paterson to examine it growing, and found it even better than at the Boston exhibition. It is of free growth and sturdy habit in the field, and a profuse bloomer in the greenhouse. Mr. Tailby has been a grower and raiser of Carnations for thirty years, and his acquaintance with varieties, new and old, is extensive. He says that in many respects Alaska resembles Snowdon, an old variety of ten or a dozen years ago, possessed of many fine qualities. Its main defect was a tendency to produce a head, or bunch, of buds, to the detriment of the leading bud. He attempted repeatedly, by crossing and recrossing, to remedy this defect, but never succeeded fully. All seedlings possessing to any degree the merits of Snowdon had also its defects.

Mr. Zirngiebel, of Needham, Massachusetts, is undecided between Alaska and Pride of Erlescourt for best white. The latter, according to some growers, does not last well when cut. Portia is a grand scarlet, and still a great favorite. It is especially free in flowering during the early part of the season. Although a continuous bloomer, it does not compare with Hector in size, which, however, is later. E. G. Hill is another fine scarlet of neat low growth, and well suited for front benches. As yet there is no ideal scarlet in the measure that William Scott is the ideal pink. Daybreak is looking well wherever seen. It is blooming freely, with fine long stems; the flowers of the largest size, of charming peach-blossom shade. Besides being one of the handsomest, it is also one of the most profitable varieties grown, nearly every shoot bearing a flower. Nicholson, for its large size and lovely form, is one of the handsomest varieties grown. It is a carmine-pink of pleasing shade with a peculiar lustre or sheen not possessed by any other variety. Mr. Zirngiebel has a cross between Nicholson and William Scott. It is fairly intermediate, having the erect habit and form of flower characteristic of the seed parent, while in size and color the flowers more nearly approach those of the pollen parent. Eldorado is the long-looked-for profitable yellow, but, like its predecessors, it is not a pure yellow. It is, in fact, a finely fringed and fragrant Picotee, edged carmine, on a yellow ground, and a most beautiful Picotee, too. To produce such a magnificent winter bloomer in this (Picotee) section is an achievement of which Mr. Shelmire, of Avondale, Pennsylvania, may well be proud.

Report comes that blooms of the Chrysanthemum Yellow Queen were offered for sale on September 27th, and of Madame Bergmann and Madame Lacroix on the 28th. This is unusually early. I once cut blooms of Madame Lacroix on September 28th, but these were from early crown-buds. Even though the blooms appeared open enough to cut, there was an apparent tightness in the buds which gave the impression that the flowers were not developed. Blooms from crown-buds are never as satisfactory for any floral arrangement as those from terminals. The larger bud characteristic of the crown is never thoroughly hidden by the expanded flower, as in the case of terminals, nor is there certainty of a perfect bloom as there is from a terminal bud; some are sure to be deformed.

From my own observations, the season is a few days late,

perhaps owing to the unseasonably warm weather of the middle of September. Certainly, the blooms do not mature quickly until the nights begin to get cool; for, even when Chrysanthemums are housed, the conditions indoors must have some relation to those existing outdoors, and so natural to the plant. It has been proven that no amount of forcing will, in fact, bring a plant earlier into bloom; and when fire-heat is used it is rather to maintain a dry air as a preventive of mildew and other fungoid diseases so disastrous to the foliage in the later stages of the development of the plant.

Mrs. Henry Robinson is the first variety to bloom here. It is a white-flowered Japanese incurved, regular and graceful in outline. So far it is the best early white. The coming popularity of the Japanese incurved, of neater and more graceful outline, to the exclusion of the coarser varieties which had only size to recommend them, may be considered as indicating an advance in taste. Mrs. E. G. Hill was cut on the 5th of October last year, but will not be ready to cut this year until the 15th, to be followed a day or two later by Nemesis and M. J. Parker, Jr., both pink. Ivory will not be open until the 20th, with Crystallina at about the same date, after which the season will be fairly opened.

The scorching or burning of many crimson and pink varieties is a matter which has troubled growers for a number of years. It is discouraging to see a large, well-formed bud with half the bloom blighted on opening. It looks as if lenses might have been formed by water on the under side of the glass, through which the sun's rays had passed with added power. This is the idea many have; though I cannot explain the trouble, I do not think this explanation correct. I know shading will not altogether prevent it, although it may to some extent. I think the injury is done in the bud state, but does not become noticeable until development proceeds. I have noticed, in the morning, dew covering the very fine pubescence on the outside of the unexpanded florets. I think less scorching would result if this dew could be evaporated by airing early, or some ventilation could be left on overnight, with heat enough to keep the air dry, so that this dampness could be cleared off before the sun gained power. I have followed this plan consistently this season, and so far I have not seen a sign of the trouble. The trouble with William Seward, a fine early crimson, began last year when in the bud state; the buds are now—October 14th—well forward in opening and all perfect.

The finishing touches have been given to our specimen plants for exhibition.

Wellesley, Mass. *T. D. Hatfield.*

Notes on Apples.

THE Red Beitigheimer Apple, which was so favorably noticed in Garden and Forest for September 25th, page 390, has fruited here several years. While it has valuable qualities for culinary and market purposes, its flesh is rather coarse, and it would not be called a good dessert fruit except by those who like a brisk subacid flavor. On account of its symmetrical form, large size and handsome color no apple in the station collection attracts more attention than this at fairs and exhibitions. Under good cultivation it is a free grower and a regular and abundant bearer. The fruit is very large, and quite apt to drop before it is well colored. This fault is more serious with the Red Beitigheimer than with Wealthy, Alexander or Gravenstein, and probably will prevent its being planted extensively in commercial orchards.

Among the comparatively new or little-known varieties of considerable merit is the Sharp. The fruit resembles Maiden Blush somewhat in shape and color, and is better for dessert use than that variety. Its flesh is nearly white, fine-grained, tender, moderately juicy, nearly sweet, of mild pleasant flavor and very good quality; season, October. The tree has fruited here but three years, but it appears to be a good bearer.

One of the handsomest late August and early September apples in the station collection is the Stump, which is excellent for market or home use. It begins to ripen soon after Chenango Strawberry, which it resembles in shape. The tree is upright and productive. The fruit, borne on short spurs close to the limbs, is pale yellow, beautifully striped and shaded with red. Flesh firm, crisp, tender, subacid, mild in flavor.

Switzer is a very handsome German apple that begins to ripen about the first of August. The fruit, which is of medium size, is nearly white, with a beautiful blush. It is very good in flavor and good in quality either for dessert or for culinary use. The tree is productive.

Williams' Favorite is a dessert fruit that should be more widely known. Its symmetrical form and deep red color make it an attractive apple in market. It is also desirable for home use, as it is good in flavor and quality. The tree makes moderate growth and is a good bearer.

Among the October apples desirable for culinary use may be mentioned Cox's Pomona. It is an old variety of English origin. The fruit is large, highly colored with crimson on a clear, very pale yellow ground, making it an attractive market fruit. The flesh is white, crisp, subacid. It cooks evenly and ranks good in quality.

Experiment Station, Geneva, N. Y. *S. A. Beach.*

California Irises.—Like many other plants native to the California coast, the Irises are not satisfactory under ordinary cultivation. I. Macrosiphon, which grows so vigorously in northern California and Oregon that the long slender leaves, with the strong fibres which form their edges, are used for making ropes, fish-lines, nets and coarse cloth, has been rarely seen in such robust form elsewhere. The beautiful I. bracteata, too, which is figured in the first volume of Garden and Forest, page 43, has also proved troublesome to cultivators. In regard to these two plants Herr Max Leichtlin writes that he has received them from their native quarters fresh and looking healthy, but, after many trials, they have never lived long. He has found, however, that they can be moved when they are in full vegetation. They must be grown from seed, and the seedlings must be allowed to remain where they are until they have formed solid root-stocks. After this, and when they are beginning to grow, they can be safely handled and transplanted like other Irises. This spring Herr Leichtlin had plants with twelve to thirty flowers open at the same time in all shades of ochre and cream color. They certainly are striking plants, and it is to be hoped that growers will test this treatment in eastern North America.

Elizabeth, N. J. *J. N. G.*

Aglaonema commutatum.—Unlike the rest of the family, this species is quite showy when in flower, and as its numerous spathes are freely produced it is well worth growing for the sake of the flowers alone. The leaves, while quite ornamental, are less richly colored than those of Aglaonema pictum or even A. nebulosa. They are eight or ten inches long, green and glossy, with a few silvery spots scattered over the surface. The spathe is two or three inches long, spoon-like, of a creamy white and waxy in texture. The spadix is cylindrical or slightly tapering to the base. The stem is thick and fleshy, covered by the sheathing petioles of the leaves. The plant is generally kept dwarf and compact, side shoots being freely produced if the main shoot is topped. It is most ornamental when only eight or ten inches high, but broad and spreading.

Short Hills, N. J. *N. J. R.*

Correspondence.

Garden Notes from Southern California.

To the Editor of Garden and Forest:

Sir,—Ipomœa versicolor, or, as it is commonly known in gardens, Mina lobata, a charming climber from tropical America, is still a comparative stranger to our people, but it is admired by all who have grown or seen it. It makes a quick and truly tropical growth, climbing to the top of whatever support is given to it and reaching still upward until it bends under its own weight. The mass of dark green foliage is refreshing in a thirsty land, but when the slender spikes of buds appear, at first of a rich poppy-red, gradually changing to a delicate canary-yellow, the plant is strikingly handsome. When fully open the flowers are pure white, slightly tinged with yellow at the base of the corollas, and a faint, almost perceptible, ring of rose-purple around the edges. The spikes of flowers are in pairs, like the tines of a fork, erect, with a graceful curve, and carrying thirty to forty buds and flowers; the flowers at the base of a pure white, like the down of a bird's wing, and the brilliant buds at the tips heighten the fancied resemblance to the wings of a parrot, whence comes the popular name of the plant among the Mexicans, who call it Ala de Perico. In some of the villages in the warm portions of Mexico I found that this vine was grown in every yard in the greatest profusion. The exsert filaments are twice the length of the corolla, and are of a straw-yellow, the anthers of an Indian yellow. The plants wilt before the least touch of frost, and mature seed with great uncertainty; probably to this fact, and the consequent high price of the seed, is due its rarity in American gardens.

Lantana delicatissima is probably a Mexican shrub, although

its native country is unknown. The slender flexuous branches make it a trailing plant when without support. The rather scattering umbels of phlox-purple flowers usually contain one or more flowers, with a canary-yellow centre bordered with white, followed by a fruit slightly resembling a blackberry. It seems to be easily propagated, and is said to have once been a favorite in eastern conservatories, but it flourishes here at all seasons out-of-doors.

Narcissus Corcyrensis, a dainty species sent to us from the Holy Land, bloomed on Christmas Day. The flower was single, pure white, with a tiny orange-colored cup, the whole less than an inch across, and borne on a stem just three inches high. Other plants of the same species bloomed late in September. This species is referred to N. Tazetta in the *Index Kewensis*.

Orcutt, Calif. *C. R. Orcutt.*

Bulletins of the Experiment Stations.

To the Editor of GARDEN AND FOREST:

Sir,—I should like to add a word to what you said last week on the experiment stations concerning the mechanical make-up of the bulletins. Some of those which I received are printed on the flimsiest of paper with battered type, and the numerous typographical errors show that they have had nothing like careful revision or proof-reading. Others show attempts at illustration which are half-tone reproductions of photographs taken with cheap lenses, and carelessly printed at that. Now, an illustration which is made to enforce some lesson ought to be accurate, and certainly if it is used simply to make the bulletin attractive nothing but the very best work is worth using. It seems to me that no clean, sharp, scientific work can be expected in an office where the publications are of such a low mechanical and artistic quality.

Bloomfield, N. J. *S. R.*

[It is probable that in some states the stations ought not to be held responsible for the mechanical quality of their bulletins. It is sometimes the case that there is a state officer who is authorized to do all the public printing, and it may be that under such regulations the station authorities have not the power to secure such paper, type and press work as they desire. It is to be hoped, for example, that neither the board of control nor the director of the Ohio Experiment Station is responsible for the paper or the printing or the illustrations in the thirteenth annual report of that station, which is dated December, 1894, but which has just come to hand.—ED.]

How to Exterminate Cat Tails.

To the Editor of GARDEN AND FOREST:

Sir,—Will you kindly inform me under what depth of water common Sedge Grass and Cat Tails will live? I have a swamp of fresh water, and it is now nearly covered with these Grasses. I can at a small expense have them cut a foot below the surface, and then I can raise the water until it is everywhere three or four feet deep. Can I stop the growth of these plants in this way and thus secure a clean surface of water?

Newark, N. J. *T.*

[When Cranberry-bogs are prepared they are flooded in this way, and if the pond is kept four feet deep continuously through the season the bog-plants are practically destroyed. Mr. William Tricker, however, writes that while Sedge Grass cannot live under this depth of water, he has seen Cat Tails survive in water three feet deep. His advice is to draw off the water if possible, and in the spring, as fast as the Cat Tails appear, to pull them up and keep at it until they are exterminated. If this is impracticable, persistent cutting of the tops will kill them, although it may be a tedious job. Of course, when the tops are constantly cut the roots cannot mature and will ultimately die. We should be very glad to publish the experience of any one who has had success in exterminating Cat Tails.—ED.]

Railway Station Gardens.

To the Editor of GARDEN AND FOREST:

Sir,—Referring to a note in No. 388 of GARDEN AND FOREST, concerning the prizes offered for the best station gardens by the Midland Railway in England, I would say that these station gardens are among the brightest memories of a recent visit to England. The glimpses of flowers one gets as the train shoots by a small station, or the view, when the train stops at a larger one, of carefully tended beds with thousands of bright blossoms, were always refreshing. The better flowering annuals were often employed in good-sized beds, and Roses in their season were always abundant and left a most pleasing impression. There is no need of our literally copying the English style of planting, but it would be well if the directors of some of our roads would imitate this English example in a general way and make the spaces about our railway stations, which are now bare and often unsightly, beautiful with greensward, well-selected shrubs and plants.

Clifton, N. Y. *E. H. B.*

Poisoning from Rhus.

To the Editor of GARDEN AND FOREST:

Sir,—My experience coincides with that of the writer in your issue for October 2d. I have twice been severely poisoned by Rhus Toxicodendron. After the first poisoning it was seven or eight years before the effects of the poison ceased to appear year after year. I still have an annual recurrence of the trouble from the effects of my last poisoning, although with a decreasing severity each year.

Philadelphia, Pa. *O. W. Spratt.*

Recent Publications.

Synoptical Flora of North America. Vol. i., Part i., Fascicle 1. By Asa Gray and Sereno Watson; continued and edited by Benjamin Lincoln Robinson. American Book Company, 1895.

This work, a synoptical description of the plants of North America north of Mexico, was planned by Asa Gray. In 1878 he published part i. of the second volume, comprising the gamopetalous orders after Compositæ, and in 1884 part ii. of the first volume, including the Gamopetalæ, from Caprifoliaceæ through the Compositæ. During the last years of his life he was engaged upon the earlier polypetalous orders, and at the time of his death, in January, 1888, he had finished several of the orders before Leguminosæ. After Dr. Gray's death the work was continued by Dr. Sereno Watson, who prepared the manuscript of eleven genera of Cruciferæ, including several of the largest and most difficult groups of the order. In 1892 Dr. Watson died, and the continuation of the work was entrusted to his successor in the curatorship of the Gray Herbarium, Dr. Benjamin Lincoln Robinson, who now publishes Fascicle 1 of Part i., Vol. i., including the polypetalous orders from Ranunculaceæ to Frankeniaceæ in 208 pages.

The present instalment of this great work follows its predecessors in form, the orders elaborated by Dr. Gray being printed from the manuscript as he left it, with little change, additions, whether of extended range, new synonyms or bibliographical references, being added in foot-notes. All questions of nomenclature have been treated with the greatest conservatism; and those botanists who dislike reforms in nomenclature will find new comfort in this work, while those who are laboring for a stable nomenclature will regret the differences of opinion among the working botanists of the country, which it only too clearly makes evident. But whether the names of the plants in this work are selected according to a rule or to suit the fancy of individual botanists is a matter of small importance in comparison with the completion of this work; and this instalment will be received with the greatest satisfaction by the botanists of all countries.

A comprehensive Flora of North America has long been needed, and the absence of such a work has proved a serious hindrance to the study of our botany. Apart from its value, however, as a descriptive account, in convenient form, of the plants of one of the great divisions of the earth's surface, the completed *Synoptical Flora of North America* will be the best monument his successors can raise to the memory of the great master of American botany, whose life was spent in preparing for this work.

Notes.

Since the drought has been broken late-flowering varieties of Tamarisk are putting out new flowers, which are of a deeper and more attractive color than the earlier ones were.

Under a law passed by the last session of the Legislature of Rhode Island the state is directed to construct a sample half-mile of good road in any town which petitions for it and will pay one-quarter of the cost. Fifteen towns have asked for such object-lessons, and it is hoped that by this means the movement for improving the quality of the public highways of the state will receive a new impetus.

A woman in Brooklyn who visited the grave of a deceased relative in Cypress Hills Cemetery, some months ago, alleges that she was poisoned by Rhus Toxicodendron which had been allowed to grow in her lot. She has sued the cemetery association for $10,000 damages on account of the sufferings which she has since endured. This gives rise to some very interesting questions as to the responsibilities of corporations who control cemeteries.

The sidewalk flower-stands are again gay with Chrysanthemums, and the superb masses of color they make justify the popularity of the flower, and make it safe to prophesy that it will long retain its place against all rivals as the Queen of Autumn. Marion Henderson in early October was the leading yellow variety, its even size, stiff stems and healthy leaves making it one of the most desirable of the early sorts; Madame Bergmann was the earliest of the good white varieties, while Merry Monarch was only a few days later; Marquis de Montmort is a good pink, which was in market here on the 30th of September.

An interesting plant lately received at the Horticultural Department of Cornell University is Eleusine coracana. It belongs to the Grass family, but is unknown in a wild state. It is supposed to have come from Eleusine Indica, the common Crab Grass of dooryards, although it differs from this plant greatly in size, being four feet high, and in the appearance of its seeds, which are smooth instead of being wrinkled. The plant is known in China and India as Natchnee and Mandua, and thousands of acres of it are grown in those countries and in Japan, where it is a famous food-plant, the flour from the farinaceous seed being made into bread. A form of it is also in cultivation as an ornamental grass.

Bulletin No. 30 of the New Hampshire Experiment Station gives a full account of the methods and cost of macadamizing a section of a country road. Illustrations show the methods of construction at various periods, and there is an itemized account for grading, ditching and surfacing. The directions are full and complete, and the little pamphlet ought to have a genuine practical value in country districts where good road engineers are scarce. In regard to repairs, the following sound advice is given: Men should be employed in each section of the town to make all necessary ordinary repairs and surfacing, not once or twice a year, but as they are needed. Nothing is so costly as to allow a good road to go to pieces for lack of timely attention.

Three-fifths of the oil of peppermint consumed in the world is produced, according to the Detroit *Tribune*, in eight counties of Michigan. The oil product of that state this year will amount to 150,000 pounds, and between twelve thousand and fifteen thousand acres are devoted to the cultivation of Peppermint. Frost and drought have injured the older plantations this year, although the plants set this spring have escaped injury. The peppermint is cut when in blossom like hay, and when dried is placed in wooden vats and steamed until the cells burst and the oil passes upward with the steam, which is condensed and conducted into a reservoir where the oil rises and is skimmed off. It requires 350 pounds of dried peppermint to produce one pound of oil. An acre of land will yield from six to ten pounds, and in exceptional cases even as great a quantity as fifty pounds. This year the price has ranged from $1.60 to $1.70 a pound.

In speaking of shrubs which resist the drought and heat, Mr. Joseph Meehan writes to the *Country Gentleman* that Caryopteris mastacanthus carried its blue flowers in great profusion, while its foliage looked fresh and clean well into October, in spite of the fact that hardly any rain had fallen in Philadelphia since the fourth of July. We have often commended this plant for its neat habit and for its profusion of bloom late in the season. It will survive the winters as far north as Boston in a dry and sheltered position, but even where it is necessary to lift the plant and place it in a pit to be kept over until spring, its distinct and striking character is sufficient to warrant this trouble. Even as far south as Philadelphia the extremities of the branches die back every winter. This does not injure the plant, however; but, in fact, makes it more compact, and as the flowers appear on the growths of the current year the more new branches made the more flowers there will be. The plant ought to become common since it is easily propagated from cuttings.

A correspondent of *The Independent* writes that the Jersey Kale, a plant largely used in the island of Jersey as food for cows, has been introduced into California and has shown itself a good forage-plant, as well as a good plant for poultry. It grows very vigorously, and some ranchers in California have stated that it will produce more food to the acre than any other crop which they have tried. The plant in question is really a tall-growing Collard, not essentially different from the well-known Collard of the south, which is popular where Cabbages do not head easily. It differs from the Scotch Kale in having leaves almost smooth instead of curled. Perhaps it has no special advantages over other members of the Cabbage family, except that with care it will last several years and will grow sometimes from eight to ten feet high if the leaves are pulled off. Even Brussels Sprouts on good California land will often grow four feet high, and it will sprout from the trunk and will give a great mass of leaves if it is cut back several times in the season.

Mr. F. W. Burbidge, writing to *The Garden*, says that, as a rule, there are two or three times too many flowers and plants used in the best of the London parks and gardens. There are too many flower-beds, and these are too near together, so that there is no breadth or repose. One may admire the quantity and variety of exotic plants and flowers employed, but he cannot but be struck with the absence of the best taste in their arrangement and disposal. Palms, Bamboos and Bananas are dotted singly and at equal distances in all directions, so that instead of seeing a series of stately effects or pictures, the result is constant repetition, and one is wearied by seeing the same plants over and over again. The London parks possess also a profusion of flower-beds, but, in nine cases out of ten, half as many plants simply arranged would be more effective. He adds that a good gardener is not always a good artist, and this artistic feeling is what is especially wanted in public gardens, and good and costly materials are more than half-wasted every year because they are badly managed.

Among pears now in season are spicy Seckels from Rochester, New York, at fifteen cents a quart. Showy Comice, the best-flavored of the larger sorts now offered, the large greenish-yellow Easter Beurre, and the medium-sized russet Winter Nelis, all range from seventy-five cents to $1.00 a dozen for the best. Quinces are becoming scarce, and the best cost in the retail stores $6.00 a barrel. Among the few peaches still arriving are good specimens from western Maryland and Pennsylvania, and some choice White Heaths, from the Hudson River district. These sell in the fancy-fruit stores at fifty cents a dozen. Selected King apples bring $5.00 a barrel at retail, and Albemarle Pippins $6.00. Apples generally are advancing in price, as the European crop is not as large as anticipated, and the high quality of the American crop has been lowered by recent unfavorable weather. The best grades of Alexander and Snow cost, in wholesale lots, $3.00 to $3.75 a barrel, and Jonathan and Alexander $3.00 and upward. Small Lady apples, not yet in their brightest colors, cost forty cents a quart. The showiest objects now seen among the best collections of fruits are the orange-red Japanese persimmons; they cost sixty cents a dozen. Jamaica oranges are being hurried on the market at the beginning of the season for high prices, many of them but half-grown, green and sour. As a consequence, prices are lower and likely to fall below the paying point. There is a steady demand for Alligator pears, and one of the fancy-fruit stores, on the arrival of a shipment of this fruit, sends notice to two hundred regular customers. The fruit at this time is coming from Nassau, and sells quickly from twenty-five to thirty-five cents apiece, and the supply is never as great as the demand. A remarkable sale of figs occurred here last Wednesday, when $40,000 worth of this fruit was sold at wholesale auction in one hour. Prices ranged from 6⅝ to 15¾ cents a pound, and on the succeeding day the extremely high price of 19¾ cents a pound was reached. Thirty-four car-loads of California fruits were sold here last week, mostly Tokay grapes. The last German prunes are now shown and cost seventy-five cents for a package containing three dozen fruits. Extra large-sized chestnuts, from New Jersey, have sold as high as $12.00 a bushel, and bring forty cents a quart at retail.